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An Examination of Specific Child Behavior Problems as Predictors of Parenting Stress Among Families of Children With Pervasive Developmental Disorders

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ABSTRACT

Introduction: Studies have shown that parents of children with pervasive developmental disorders (PDD) exhibit higher levels of stress than parents of typically developing children or children with other types of developmental delays (DD). This relationship appears to be mediated by elevated levels of behavior problems observed in children with PDD. However, little is known about what specific child behavior problems are most common in this population or how these behavior problems relate to parental stress. We examined the relationship between parenting stress and child behavior problems in parents of young children with PDD. *Method:* The current study utilized data from the Mindful Awareness for Parenting Stress (MAPS) project and included 72 parents of children with PDD. The mean age of the parents in the current study was 34.81 years ($SD = 7.67$) and the mean age of the children was 3.86 years ($SD = 0.98$). *Results:* The most commonly endorsed classes of child behavior problems included attention problems, language problems, and externalizing behavior problems. Three specific behavior problems, “Doesn’t answer when people talk to him/her,” “Speech problem,” and “Temper tantrums or hot temper,” were significantly related to parental stress levels at intake. Furthermore, these three behavior problems uniquely predicted parenting stress. *Conclusions:* Identifying the behavior problems that are most difficult for parents to handle may allow clinicians to tailor interventions to the specific needs of families. The current study indicated that social difficulties, speech problems, and tantrums have the greatest negative impact on parental stress, highlighting these problems as ideal targets for interventions.

KEYWORDS

Autism spectrum disorders; behavior problems; parental stress; pervasive developmental disorder

Parents of children with developmental delays (DD) have been found to have very high levels of parental stress (Baker et al., 2003; Oelofsen & Richardson, 2006; Webster, Majnemer, Platt, & Shevell, 2008), and the stress experienced by these parents appears to be better accounted for by the elevations in child behavior problems seen in children with DD, rather than intellectual or developmental functioning (Baker, Blacher, & Olsson, 2005; Hastings, 2003;

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Neece, Green, & Baker, 2012). Among children with DD, children with *DSM-IV* pervasive developmental disorders (PDD; now diagnosed as autism spectrum disorder under *DSM-5*), have been found to have the highest levels of behavior problems and, in turn, parents of these children typically show the highest levels of stress (Eisenhower, Baker, & Blacher, 2005; Kozlowski & Matson, 2012). The relationship between stress and behavior problems appears to be reciprocal, such that elevated child behavior problems lead to increases in parental stress, which further exacerbate the child's behavior problems (Neece et al., 2012; Pesonen et al., 2008). Within the *DSM-IV*, PDDs included a range of diagnoses that incorporated Autistic Disorder, Rett's Disorder, Childhood Disintegrative Disorder, Asperger's Disorder, and Pervasive Developmental Disorder Not Otherwise Specified (American Psychiatric Association, 2000). The *DSM-5* provides a single diagnosis of autism spectrum disorder (ASD) to replace these individual disorders (American Psychiatric Association, 2013). We utilized the *DSM-IV* terminology of PDD in the current study in order to reflect the diagnoses available for this sample at the time of recruitment.

Despite the host of research demonstrating a link between child behavior problems and parenting stress, little research has examined the association between specific behavior problems that are most common in children with PDD and parental stress. Therefore, it is important to examine the most frequently reported behavior problems among children with *DSM-IV* PDD diagnoses and the association between those behavior problems and parenting stress in order to better tailor interventions for the needs of children and families. The goals of the current study were twofold: (1) to further examine the relationship between behavior problems exhibited by children with PDD and parental stress by determining which behaviors are most commonly endorsed by parents on a measure of child behavior problems, and (2) to determine how these specific behaviors relate to parental stress.

Stress Among Parents of Children With PDD

Studies have consistently shown elevated levels of parenting stress, or the extent to which the parent perceives stress in his or her parental role (Abidin, 1995), in parents of children with DD (Baker et al., 2003; Neece et al., 2012; Webster et al., 2008) as compared to parents of typically developing children (Oelofsen & Richardson, 2006). Among parents of children with DD, those who have children with PDD generally report the highest levels of parental stress (Baker-Ericzén, Brookman-Frazee, & Stahmer, 2005; Estes et al., 2009; Montes & Halterman, 2007; Pisula, 2007). In studies examining the clinical profile of these parents, approximately one third of both mothers and fathers reported clinical levels of parental stress (Davis & Carter, 2008), suggesting a need for intervention in this population. Further, parents of children with

PDD also reported more family problems (Pisula, 2007), less social support (Pisula, 2007), poorer physical health (Eisenhower et al., 2009; Oelofsen & Richardson, 2006), higher levels of depression (Hastings et al., 2006), and increased marital conflict (Kersh, Hedvat, Hauser-Cram, & Warfield, 2006). Given that parents of children with PDD are at an increased risk for significant parental stress and poor psychological well-being, additional studies examining this population are needed.

Child Behavior Problems and Parental Stress

Children with DD generally have increased levels of behavior problems compared to typically developing peers. Among children with delays, those with PDD, specifically autism or autistic disorder, generally display higher levels of behavior problems than children with other developmental disorders, including those with Down syndrome and undifferentiated developmental delays (Eisenhower et al., 2005; Estes et al., 2009; Kozlowski & Matson, 2012). Comorbid psychiatric disorders, including attention-deficit/hyperactivity disorder (ADHD) and anxiety disorders, are commonly found in children with PDD and are associated with even higher levels of problem behaviors (Simonoff et al., 2008).

Research has shown a strong correlation between children's behavior problems and parental stress. Behavior problems experienced by children have been found to predict parental stress (Hassall, Rose, & McDonald, 2005; Hastings, 2003). Interestingly, elevations in children's behavior problems appear to account for the relationship between the child developmental status and parental stress (Baker et al., 2003; Firth & Dryer, 2013; Herring et al., 2006; Lecavalier, Leone, & Wiltz, 2006; Neece et al., 2012). Thus, the negative impact of PDD on parental stress appears to be the result of associated behavior problems, rather than the presence of developmental delays. Furthermore, parents often directly attribute much of their stress in parenting and the declines in their psychological well-being to the behavior problems of the child (Suárez & Baker, 1997), and both internalizing and externalizing behaviors have been linked with increases in parental stress (Donenberg & Baker, 1993). While behavior problems have been shown to predict parental stress, it has also been suggested that parental stress has a negative effect on behavior problems. Thus, parenting stress and child behavior problems appear to have a mutually escalating reciprocal relationship such that child behavior problems lead to increases in parental stress, which further exacerbates child problem behaviors (Baker et al., 2003; Neece et al., 2012; Pesonen et al., 2008). Additionally, high parental stress predicts fewer benefits for children in early intervention programs (Brinker, Seifer, & Sameroff, 1994; Osborne, McHugh, Saunders, & Reed, 2008; Robbins, Dunlap, & Plienis, 1991; Strauss et al., 2012) and fewer gains in parenting

skills in behavioral parenting training interventions (e.g., Baker, Landen, & Kashima, 1991).

The Current Study

The current study further examined the relationship between child behavior problems and parenting stress among children with PDD. We chose to focus the study on parents of children with PDD due to the elevated levels of both behavior problems and parenting stress frequently observed in this population. The questions we examined were: (1) Which behaviors on the Child Behavior Checklist (CBCL) do parents of children with a PDD most commonly endorse? and (2) Among behaviors most commonly endorsed by parents of children with PDD, which specific behaviors are associated with parenting stress and, among those associated, which behaviors uniquely predict parental stress levels? To the author's knowledge, this is the first study to examine the specific behavior problems related to parenting stress and, therefore, all research questions were exploratory. For the purposes of the current study, behavior problems were defined broadly as maladaptive behavioral, emotional, and/or social functioning in accordance with the CBCL (Achenbach, 2000). In anticipation of our findings, presented below, readers should note that some developmental skills (e.g., in communication) are included in the CBCL listing of "problem behaviors." Hence, problem behaviors is used broadly in this article to include difficulties such as in communication.

Materials and Method

Participants

The current study included 72 parents of children with PDD who participated in the Mindful Awareness for Parenting Stress (MAPS) project, a mindfulness-based stress reduction (MBSR) intervention study at Loma Linda University, which included parents of children aged 2.5–5 years old with DD. Participants were primarily recruited through the Inland Regional Center. In California, practically all families of young children with PDD receive services from one of nine regional centers. Families who met the inclusion criteria were selected by the regional center's computer databases and received a letter and brochure informing them of the study. Information about the study was also posted on a website which allowed interested parents to submit their information.

Criteria for inclusion in the study were: (1) having a child aged 2.5–5 years, (2) child was determined by regional center (or by an independent assessment) to have a *DSM-IV* diagnosis of PDD, (3) parent reported more

than 10 child behavior problems (the recommended cutoff score for screening children for treatment of conduct problems) on the Eyberg Child Behavior Inventory (ECBI; Robinson, Eyberg, & Ross, 1980), due to the larger study examining reductions in parenting stress and resulting changes in child behavior problems, and (4) parent was not receiving any form of psychological or behavioral treatment at the time of referral (e.g., counseling, parent training, parent support group, etc.). Parents of children with debilitating physical disabilities or severe intellectual impairments (e.g., nonambulatory and/or lack of receptive language, respectively) were excluded from the project, as this prevented the child from participating in a parent-child interaction task that was a part of the larger study. For the current sample, parents also had to complete all measures at the intake assessment and attend this assessment before the beginning of the first intervention session. For the larger study from which the current sample was drawn, 219 families were screened, 159 were determined to be eligible, and 118 parents enrolled. Twenty-eight parents completed the intake assessments but dropped out before the study began, leaving a final sample of 90 parents. The current sample was restricted to parents of children with PDD, which eliminated an additional 18 children that were included in the larger study, resulting in a final sample of 72 parents. There were no demographic differences between participants who completed the study and those who dropped out. Similarly, there were no demographic differences between families of children with PDD and those with other developmental disabilities.

The current study included 72 parents of children with PDD. The majority (76.5%) of the children were boys. Parents reported 45.7% of the children as Hispanic, 27.2% as Caucasian, 3.7% as Asian, 1.2% as African American, and 22.2% as Other. The mean age of the children was 3.86 years with a standard deviation of 0.98. Most parents (76.8%) reported that their child's *DSM-IV* diagnosis was Autistic Disorder, and the remaining children were reported to have another diagnosis on the autism spectrum (i.e., PDD-NOS or Asperger's disorder). According to the Gilliam Autism Rating Scale, Second Edition (GARS-2, Gilliam, 1995; see Measures Section), 71.4% of the children had a "very likely" diagnosis of autism and the remaining 28.6% had a "possible" diagnosis. For a subset of the sample ($n = 26$), we were also able to obtain IQ data. Children within the subset had IQs ranging from 42 to 116, with 57.7% ($n = 15$) falling below 70, indicating potential comorbid *DSM-IV* diagnosis of intellectual disability. At the time of the intake assessment, 90.9% of the children were reported to receive special education services in school and 78.8% of the children were enrolled in a special education classroom. Most parents were married (79.0%) and were mothers (84.0%). The mean age of the participating parent was 34.81 years with a standard deviation of 7.67, with ages ranging from 21 to 38 years. Families reported a range of annual income, with 45.6% reporting an annual income of more than \$50,000 and

18.5% below the poverty level. Parents completed an average of 14.57 years of school with a standard deviation of 2.43.

Procedures

Interested parents either contacted the project by phone, returned a postcard requesting the PI to contact them, or submitted their information on the project website. If the family met eligibility criteria for the study, an appointment for an intake laboratory assessment was scheduled. Prior to the intake laboratory assessment, a packet of questionnaires was mailed to parents to complete before coming into the lab. The informed consent and an interview to collect demographic information were completed at the intake laboratory assessment.

Measures

Demographic Data

Demographic data, such as participants' birthdays, marital status, and family income, were collected during an interview with the participating parent.

Child Behavior Checklist for Ages 1½–5 (CBCL)

The CBCL 1½–5 was used to assess child behavior problems. The CBCL contains 99 items that are rated as *not true* (0), *somewhat or sometimes true* (1), or *very true or often true* (2). Each item represents a problem that distinguishes clinically referred populations, such as “acts too young for age.” The CBCL yields a total problem score, two broadband externalizing and internalizing scores, seven narrowband scales, and six *DSM*-oriented scales; however, the current study analyzed the individual items. While the CBCL is typically used as a broadband measure, it also allows for the examination of individual behavior problems, which makes it an ideal measure for the current study (Lengua, Sadowski, Friedrich, & Fisher, 2001; Turk, 1998).

Parenting Stress Index—Short Form (PSI)

The PSI (Abidin, 1995) was used to assess parenting stress pre- and post-intervention. It contains 36 items that are rated on a 5-point Likert scale ranging from *strongly agree* (1) to *strongly disagree* (5), and contains three subscales, Parental Distress, Parent-Child Dysfunctional Interaction, and Difficult Child, which are combined into a Total Stress score (Abidin, 1995). With respect to the individual subscales, we used the Parental Distress subscale, which measures the extent to which the parent is experiencing stress in his or her role as a parent. This subscale was chosen because it assesses parental stress independent of child behavior issues,

which were also a key outcome variable of the current investigation. The reliability of the Parental Distress subscale in the current sample was adequate (Cronbach’s $\alpha = .84$).

Gilliam Autism Rating Scale, Second Edition (GARS-2)

The GARS-2 (Gilliam, 1995) was used to provide support for the parent-reported PDD diagnoses. The GARS contains 42 items that are rated on a 4-point scale ranging from *never observed* (0), to *frequently observed* (3). Three subscales, Stereotyped Behaviors, Communication, and Social Interaction, are combined to create an autism index score. The index score indicates an unlikely, possible, or very likely autism diagnosis. The reliability of the GARS in the current sample was also adequate (Cronbach’s $\alpha = .89$).

Data Analytic Plan

The distributions of the CBCL and PSI were examined for normality and the presence of outliers. No outliers or violations of the assumptions of linear regression were found. Additionally, demographic variables that had a significant relationship ($p < .05$) with one or more of the independent variables *and* one or more of the dependent variables were tested as covariates in the analyses. However, none of the demographic variables were significantly correlated with both the independent variables and the dependent variables and, thus, no covariates were included in the analyses. Additionally, multicollinearity was assessed using variance inflation factors (VIF). All values were found to be acceptable based on the suggested cutoff score of 10 (see Table 1 for VIF values; Cohen, Cohen, West, & Aiken, 2003).

In order to examine which behavior problems parents endorsed most often, a total endorsement score was calculated by summing the scores across participants for each individual CBCL item. The 10 items that had the highest total endorsement scores were then correlated with the PSI using Spearman’s rho correlations, which accounted for the ordinal nature of the data. The items that were significantly correlated ($p < .05$) were used in a

Table 1. Results of linear regression predicting pre-TX stress.

	<i>b</i>	<i>t</i>	Sig.	95% CI (<i>b</i>)	VIF
(Constant)	34.75	19.83	.000	[31.24, 38.25]	
Doesn’t answer when people talk to him/her (Endorsed v. Not Endorsed)	-1.15	-.21	.83	[-11.83, 9.54]	1.06
Doesn’t answer when people talk to him/her (1 v. 2)	6.19	3.10	.003	[2.19, 10.19]	1.04
Speech problem (Endorsed v. Not Endorsed)	9.35	2.39	.02	[1.52, 17.58]	1.18
Speech problem (1 v. 2)	2.18	.74	.46	[-3.71, 8.07]	1.20
Temper tantrums or hot temper (Endorsed v. Not Endorsed)	6.75	2.04	.046	[1.13, 13.37]	1.06
Temper tantrums or hot temper (1 v. 2)	3.04	1.42	.16	[-1.26, 7.34]	1.08

Note. Endorsed v. Not Endorsed indicates a comparison between those who endorsed at a 1 or 2 and those who did not endorse; 1 v. 2 indicates a comparison between endorsement at a level of 1 and a level of 2.

regression model to determine what items uniquely predicted parenting stress.

A linear regression model was used to predict parenting stress from the behavior problems that were most commonly endorsed on the CBCL. Prior to analysis, the items that significantly correlated with parental stress were recoded using a contrast coding system that allowed for appropriate interpretation given the categorical nature of the responses on the CBCL. By using contrast coding, we were able to make specific comparisons based on the level at which behavior problems were endorsed. Two contrasts were made for each behavior problem: (1) those who endorsed the behavior problem at any level compared to those who did not endorse the behavior problem, and (2) those who endorsed the behavior problem as occurring “sometimes” compared to those who endorsed the behavior problem as occurring “often.” The dependent variable was the intake PSI score. The independent variables were the contrast codes for the behavior problems that significantly correlated with the parental distress scores on the PSI.

Results

Endorsement of CBCL Behavior Problems

The total endorsement scores for the 10 most frequently reported behavior problems are presented in Table 2. The most commonly endorsed behavior problem was Speech problem, which is not surprising given that language delays and impairments are core criteria for a *DSM-IV* diagnosis of PDD. The next three problems that were endorsed most frequently involved impulsivity (i.e., Demands must be met immediately and Can’t stand waiting; wants everything now) and attention (i.e., Can’t concentrate, can’t pay attention for too long). Other common behavior problems included difficulties with frustration tolerance (i.e., Easily frustrated and Temper tantrums or hot temper), inappropriate social behavior (i.e., Acts too young for age and Avoids looking others in the

Table 2. Behavior problems: Severity and correlation with PSI parental distress.

Behavior problem	Total endorsement score	ρ
Speech problem	108	.26*
Can’t stand waiting; wants everything now	103	.15
Demands must be met immediately	95	.21
Can’t concentrate, can’t pay attention for too long	92	.18
Easily frustrated	92	.13
Can’t sit still, restless, or hyperactive	91	.13
Doesn’t answer when people talk to him/her	87	.24*
Avoids looking others in the eye	86	.04
Temper tantrums or hot temper	84	.26*
Acts too young for age	84	.21

Note. * $p < .05$

eye), hyperactivity (i.e., Can't sit still, restless, or hyperactive), and other communication problems (i.e., Doesn't answer when people talk to him/her).

Parental Stress Levels and Behavior Problems Upon Intake

The 10 behavior problems that were most commonly endorsed were then correlated with the intake PSI scores (see Table 2). Three of the 10 behavior problems were significantly related to the intake parental stress scores ($p < .05$), including: (1) Doesn't answer when people talk to him/her ($\rho = .235, p < .05$), (2) Speech problem ($\rho = .261, p < .05$), and (3) Temper tantrums or hot temper ($\rho = .257, p < .05$).

The three behavior problems that were significantly correlated with intake parental stress levels were used in a hierarchical linear regression model to determine which problems uniquely predicted parental stress (see Table 1). The overall model was significant ($F(64,6) = 3.78, p < .01$) and accounted for 28% of the variance in parental stress scores ($R^2 = .28$). The mean stress score of those parents who endorsed Doesn't answer when people talk to him/her as "very true or often true" was 6.19 points higher than the mean score of those who endorsed the behavior as "sometimes or somewhat true" ($b = 6.19, 95\% \text{ CI} = [2.19, 10.19], p < .01$). There was no significant difference between those who endorsed the behavior problem at any level and those who did not endorse ($p > .05$), likely due to the small number of parents who did not endorse the problem at some level. Comparatively, the average parental stress score of parents who endorsed Speech problem at any level was 9.35 points higher than the average score of those who did not endorse this item ($b = 9.35, 95\% \text{ CI} = [1.52, 17.18], p < .05$). There was no significant difference in parental stress scores when parents who endorsed Speech problem as "very true or often true" were compared to those who endorsed the item as "sometimes or somewhat true" ($p > .05$). Finally, parents who endorsed Temper tantrums or hot temper at some level showed an average parental stress score that was 6.75 points higher than parents who did not endorse the item ($b = 7.66, 95\% \text{ CI} = [.13, 13.37], p < .05$). No significant difference was observed in parental stress scores between those who endorsed this behavior problem as "very true or often true" and those who endorsed as "sometimes or somewhat true" ($p > .05$).

Discussion

We examined the individual "behavior problems" most commonly endorsed among parents of children with PDD and how these behavior problems related to parental stress. The most commonly endorsed behavior problems included attention problems, language problems, and externalizing behavior problems. A subset of these behavior problems had a significant association

with levels of parental stress, particularly those involving difficulties with frustration management and speech delays.

Interestingly, the behavior problems that were most commonly endorsed were not necessarily the same ones that had the strongest relationship with parental stress. For example, Can't stand waiting; wants everything now and Can't concentrate, can't pay attention for too long were reported to be very common in our sample of children with PDD, but neither was significantly correlated with parental stress scores ($\rho = .15, p > .05$; $\rho = .18, p > .05$, respectively). Alternatively, Doesn't answer when people talk to him or her was reported to be less common, but this item had a strong association with parental stress ($\rho = .24, p < .05$). Previous research has highlighted the salience of behavior problems in predicting parenting stress as opposed to diagnostic status. While temper tantrums were related to parenting stress and fall into the externalizing behavior problems, speech and communication problems were also strongly related to parent stress and are problems that serve as core diagnostic features of PDD. Although difficulties with social communication often involve negative behaviors and may be behavioral to some extent, these are typically not considered to be behavior problems in the traditional sense. Thus, it appears that there is a component of the PDD diagnosis itself that is contributing to parenting stress for these families.

One possible explanation for the relationship between parenting stress and language/communication problems is that parents may experience significant levels of stress due to the potential impact of language and social communication behaviors on long-term functioning of the child with PDD (Eisenmajer et al., 1998; Johnson, Beitchman, & Brownlie, 2010; Mayo, Chlebowski, Fein, & Eigsti, 2013). It is possible that parents are concerned for their children's future education, relationships, and overall daily functioning. Perhaps fears regarding the negative impact of language delays on these prospects explains the importance for parenting stress. Alternatively, a second contributing factor may be that these problems are likely to be challenging in social settings, possibly making parents concerned about social evaluation. Thus, social isolation and embarrassment may be mediating factors through which these child behavior problems contribute to parental stress levels. This is consistent with previous research pointing to social evaluation as a key source of stress for parents of children with PDD (Hutton & Caron, 2005; Myers, Mackintosh, & Goin-Kochel, 2009). Therefore, it may not be the language delays common in PDD that are stressful for parents, but rather the impact of these delays on social situations. Similarly, emotional and behavioral outbursts are likely to be disruptive in social situations and are a potential source of embarrassment and negative social attention. Last, language and communication problems may have negative implications for the parents' relationships with their children, as poor parent-child relationships and decreased parental competence are often

reported in these populations (Donenberg & Baker, 1993; Hassall et al., 2005; Holmbeck et al., 1997). It seems likely that parents who are unable to effectively communicate with their children experience frustration and possibly feelings of inadequacy in their parenting skills due to their difficulties interacting with and understanding the needs of their children. On the other hand, behavior problems related to impulsivity, inattention, and hyperactivity may appear more manageable for parents, as they may feel better equipped to handle them. It is also possible that parents view these problems as more transient and less highly related to long-term functioning. Overall, it appears likely that there are many factors to consider in the relationship between parenting stress and language and communication delays in PDD. Furthermore, it is important to note the negative impact of parenting stress on interventions for children with PDD (Brinker et al., 1994; Osborne et al., 2008; Robbins et al., 1991; Strauss et al., 2012), which indicates that there is likely a reciprocal relationship between language functioning and parenting stress similar to that observed in other problems in this population.

The findings of the current study must be considered within the context of several study limitations. The first limitation is the relatively small sample size. With a larger sample size, more behavior problems may have significantly predicted parenting stress levels. A second limitation was our method of data collection. Since the same parents reported both their stress levels and their children's behavior problems, the two reports were not truly independent. Parents who were more stressed may have viewed their child's behaviors as more problematic. Future studies should compare the participating parent's report of behavior problems to that of an independent reporter, such as a teacher. Furthermore, the child's PDD diagnosis was obtained through parent report and not our own independent assessment and, thus, the methods used to determine diagnosis likely varied across participants. Finally, our results may not be generalizable to children with severe physical and/or intellectual impairments, as these children were excluded from the current study.

Future directions for this line of research include replicating the study with a larger sample. In addition to validating the results of the current study, this may facilitate the identification of additional behavior problems that are especially problematic for parents. The more behavior problems we can identify, the better we can tailor interventions to meet the needs of both children with PDD and their parents. It would also be helpful to directly ask parents how stressful specific behavior problems are for them to understand which behavior problems parents experience as the most distressing. This may also serve as a guide for behavior problems to include in future analyses. In the current study, we selected the ten items with the highest endorsement scores to correlate with parenting stress in an effort to examine several possible behavior problems while still limiting Type 1 error, given the small sample size. However, additional behavior

problems may be significantly related to parenting stress despite not being highly endorsed by parents. Therefore, it may be important to evaluate additional behavior problems, particularly those that are reported by parents themselves, as predictors of parental stress. Furthermore, as suggested by Firth and Dryer (2013), child behavior problems in this population may predict areas of stress differentially for parents. Thus, it may also be valuable to examine the relationship between specific child behavior problems and different types of parental stress.

Given the reciprocal relationship between behavior problems and parenting stress in parents of children with PDD, parental stress serves as an important target for intervention. Previously, research was largely focused on improving outcomes in children, rather than parents, but researchers recognize the importance of parenting stress and the research on stress-reduction interventions for parents has been growing in recent years (Hastings & Beck, 2004). One intervention that has gained attention is Mindfulness-Based Stress Reduction, and preliminary studies have shown promising results for parents (Bazzano et al., 2013; Dykens, Fisher, Taylor, Lambert, & Miodrag, 2014; Neece, 2014) as well as decreased behavior problems in the children themselves (Neece, 2014). Based on these early trials, MBSR appears to serve as an effective stress-reduction intervention for parents of children with PDD. In the context of future studies examining stress reduction for parents of children with PDD, it may be valuable to examine specific behavior problems as moderators of intervention outcomes and potentially target stress management in relation to these behavior problems more directly. Furthermore, as an additional direction for future research, investigations should consider ways to integrate stress reduction into interventions targeting those behavior problems that are highly related to parenting stress, such as those found in the current study. Therefore, these behavioral and parent training interventions may help parents to successfully manage their children's behavior problems *and* their own stress that they experience in response to the behavior problems.

Studies like this one examining the particular behavior problems that predict parenting stress provide clinicians with more specific targets for behavioral interventions and may encourage parents to become engaged in treatment. Thus, interventions can be tailored not only to the needs of the children, but also to those of parents, thereby improving overall family functioning.

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